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A comprehensive study of Matruja bhava and Pitruja bhava of Garbha w.s.r. to XY linked Chromosomal Disorders.

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ABSTRACT:
According to Ayurveda organs with maternal and paternal genetic make up develop according to the genetic influences of the mother and father during embryogenesis. If the part of the beeja (seed - sperm or ovum) responsible for the formation of a certain organ suffers damage, the organ will be damaged as well. However, if the beeja remains unaffected, the related organ is unaffected.
XY linked chromosomal disorders are brought on by faults in Beeja (sperm, ovum) in the male and female reproductive systems. In this paper we study correlation of XY chromosomal disorders that are linked with Matruja and Pitruja bhava of Garbha.
Key words: XY linked disorder, Matrujabhava, Pitruja bhava, Chromosome

I. INTRODUCTION:

According to Ayurveda, organs with maternal and paternal genetic make updevelope according to the genetic influences of the mother and father during embryogenesis. If any part of the Beeja (zygote) is harmed during this period of embryogenesis, the genetic defect of that part will be discovered in later life. One such idea is Prakriti (typical bodily kinds), which is genetically determined during the process of embryogenesis.
The overall prevalence of serious congenital abnormalities among 1822 newborns was 230.51 (170.99-310.11) per 10 000 births. Congenital abnormalities were included as one of the top ten causes of death in children under the age of five.[1]

In Ayurvedic classics Sahaja Roga (hereditary disease-present at birth), KulajaRoga (hereditary disease-runs in family), or AdibalaPravrittaRoga (Genetic disease)and Janma-balpravritta (Somatic anamolies) are terms used to describe genetic disorders that are brought on by faults in Beeja (sperm, ovum) and are linked to the mother's soul, uterus, time, diet, and routine. Sahaja Roga, KulajaRoga, AdibalaPravrittaRoga and Janmabalpravritta all refer to conditions that are visible at birth, run in families, and result from flaws in the male and female reproductive systems, respectively. The phrases Beeja (sperm, ovum), Beejabhaga (DNA), and Beejabhagavayava (Genes) were used to describe the morbidity of sperm and ovum.

Aim :

- To study of **Matruja** bhava and **Pitruja** bhava of Garbha w.s.r. to **XY** linked Chromosomal Disorders.

Objectives :

- To study all the aspects of Matruja and Pitruja bhava of Garbha described in Ayurvedic classics.
- To study XY linked chromosomal disorders as per modern text.
- To discuss correlation between Matruja and Pitruja bhava of Garbha with XY linked chromosomal disorders.

Materials and Methods :

- All relevant references are mostly drawn from Charak Samhita and Sushrut Samhita. In a similar vein, research publications are looked for on the internet. Following the analysis of all data, an attempt is made to make some conclusions.

II. LITERATURE REVIEW :

- **Ayurvedic Aspect :**

Garbhasambhavakar bhava

The embryo is generated by the accumulation of components from the mother, father, soul, healthy regimen, rasa (nutritive fluid), and mind. The origins of the different organs, such as maternal, paternal, and so on
There are six factors involved in Garbhasambhava.[2]

1.Matruja
2.Pitruja
3.Atmaja

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4.Satmyaj
5.Rasaj
6.Satvaj
Here we are taking first two factors i.e Matruja and Pitruja factors .
These two factors contribute in hereditary as well as somatic disease in garbha.

Matruja Bhava :

The mother participates in the embryogenesis process. Without the mother, there can be no conception or birth of viviparous species. We will now outline the biological components produced from the maternal factor.
These Matruja bhava are

Twak, Lohit, Mansa, Meda, Hruday, Mastishka, Yakrut, Pleeha, Vrukka, Basti,Amashay, Pakvashay(Uttargud and Adhargud), Kshudrantra and Sthulantra.[3]
These bhava has originated from mother only i.e X Characters.

Pitruja Bhava:

The father participates in the embryogenesis process. Without the father, there can be no conception or birth of viviparous animals. We will now outline the physical components inherited from the father.
These Pitruja bhava are
Kesha,Loma,shmashru,Nakha ,Danta, Asthi, Sira ,Snayu ,Dhamanya and Shukra.[3]

These bhava has originated from father only i.e Y Characters.
Genetic disorders are referred to as "AdibalaPravruttaVikara" in Ayurveda.
As per acharyacharakathese genetic disorders are due to beejdosha(Sperm ,Ovum). Some Example are….
1.Prameh
2.Arsha
3.Klaibya (impotence)
4.Suchimukhi , Varta, Shandi Vyonivyapad
5.ShukragatKushta etc.

If the part of the beeja (seed - sperm or ovum) responsible for the formation of a certain organ suffers damage, the organ will be damaged as well. However, if the beeja remains unaffected, the related organ is unaffected.

In classics it is clearly mention that if Matruja or Pitruja Beej ,Beejbhag and Beejbhagavayav is faulty then corresponding bhava is definitely going to form faulty and wise a versa.[4]

- **Modern Aspects:**

XY Chromosomal Disorders[5] :

Genetic illnesses called XY chromosomal disorders involve anomalies in the sex chromosomes. Individuals with a 46, XY chromosomal pattern-where the person has one X and one Y chromosome-are most frequently afflicted by these illnesses. The XY chromosomal diseases Klinefelter syndrome (XXY), Turner syndrome (45,X), and XYY syndrome are a few examples. Each of these disorders has the potential to cause a variety of physical and developmental variations, and how they affect an individual might differ greatly.

X Chromosomal disorders :

Genetic illnesses called X chromosome disorders are brought on by X chromosome abnormalities. X chromosomal abnormalities include, for example:
1. Turner syndrome (45,X): Females with one or more X chromosomes missing will develop this disease. Short stature, infertility, heart and kidney disorders, as well as other physical peculiarities, might result from it.
2. Triple X syndrome (47,XXX): Females with this disorder have three X chromosomes altogether due to the additional X chromosome they have. Most Triple X syndrome sufferers are symptom-free or only mildly affected, however some may struggle with learning or developmental issues.
3. Males with an extra X chromosome, which results in a total of two X and one Y chromosome, are affected by the Klinefelter syndrome (47,XXY). Infertility may result from it, Infertility, lower testosterone levels, and physical traits such a tall stature and reduced muscle mass are also possible effects.
4. The XYY syndrome (47,XYY) is characterized by an additional Y chromosome in males, leaving them with a total of one X and two Y chromosomes. Although tall stature is frequently linked to XYY syndrome, the majority of sufferers spend normal lives with few serious health problems.
5. Fragile X syndrome is a hereditary condition that can impact both sexes. It is the most prevalent inherited cause of intellectual disability and is caused by a mutation in the FMR1 gene on the X chromosome.
It's crucial to keep in mind that these are just a few examples of X chromosome problems. There are

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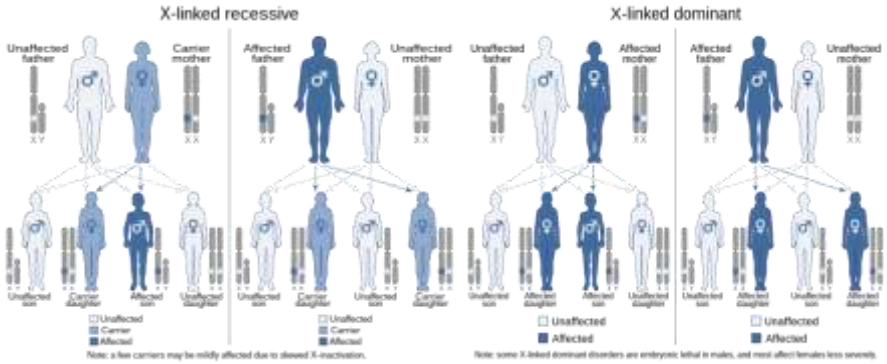
more uncommon ailments linked to X chromosome abnormalities.

Y Chromosomal disorders:

Genetic illnesses called Y chromosome disorders are brought on by alterations in the Y chromosome. The following are some instances of Y chromosomal disorders:

1. XYY syndrome (47,XYY): Males with an additional Y chromosome, giving them a total of one X and two Y chromosomes, are affected by this condition. The majority of people who have XYY syndrome exhibit minimal or no symptoms, and it is frequently linked to tall stature.
2. Jacob's syndrome (47,XYY): Also known as the 47,XYY karyotype, it is a condition where males have an extra Y chromosome, similar to XYY syndrome. Jacob's syndrome, like XYY syndrome, is typically characterized by tall stature and may not have serious health effects.
3. Azoospermia factor (AZF) microdeletions: These are minute gaps in the Y chromosome that can prevent males from becoming pregnant. They are associated with sperm absence (azoospermia) or a substantially reduced sperm count (oligospermia).
4. Gonadal dysgenesis: This is a condition in which people with a Y chromosome have underdeveloped or missing testes, resulting in infertility and other reproductive problems.

It is crucial to highlight that Y chromosome diseases are uncommon, and most people with Y chromosome mutations do not have severe health problems.



III. DISCUSSION :

All the Aspects of X linked /Maternal And Y linked/Paternal bhava of Garbha mention in ayurvedic samhitas has been taken in to consideration .

Matruja Bhava : Maternal / X linked

Bhava	**Organ**	**Disease**	**Gene Involved (X linked)**
Twak	Skin	Ichythyosis,Gotz syndrome	FDH
Lohit	Blood	Haemophilia A Haemophilia B SCA	F8 F9 Betaglobin gene
Mansa	Muscle Tissue	DMD Cystic Fibrosis	Dystrophine gene
Meda	Adipose Tissue	Obesity	CYP27A1, TFAP2B, PARK2, IFNGR1, UCP 2 & 3
Hruday	Heart	Congenital Heart Disease	TBX2
Mastishka	Brain	Retts Syndrome OptizKaveggia syndrome	MED12

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Yakrut	Liver	Congenital Hepatic fibrosis	Alfa1antitrypsin
Pleeha	Spleen	Spherocytosis	ANK1,EPB42,SLC4A1 SPTA1,SPTB
Vrukka	Kidney	Alports Syndrome	XLAS
Basti	Baldder	CA Bladder	PIK3CA,KDM6A,TP53
Amashay	Stomach	Chrons Disease	NOD2,ATG16L1,IL23R IRGM
Pakvashay(Uttargud and Adhargud)	Anal Part	Hereditery Hemorrhoids	FOXC2
Kshudrantra	Small Intestine	CA	APC,STK11,SMAD4
Sthulantra	Large Intestine	HIRSH-Sproongz	RET,EDNRB,EDN3

Pitruja Bhava : Paternal / Y linked

Bhava	**Organ**	**Disease**	**Gene Involved (Y linked)**
Kesha,Loma,shmashru	Body Hairs	Hypertrichosis	MAP2K6- CH17
Nakha	Nails	Congenital nail disorders Anonychia,Pincer nail deformity	FZD6
Danta	Teeth	Hypo/Oligodontia,Anodontia	EDA,EDARADD
Asthi	Bones	Chondrodysplasia ,Craniosynostosis	FGFR1-3
Sira	Veins	Atherosclerosis	GATA4
Snayu	Ligaments	Collagen disorders	COL1A1
Dhamanya	Arteries	PAD	CH 19
Shukra	Semen	Infertility	CFTR

Acharya Charak also mentioned 8 body types (Ashtouninditiya)[6]which are hereditary in origin. These eight undesired body types, mentioned in Ayurveda also categorized under X linked And Y Linked According to Matruja And Pitruja bhava .

Pitruja Bhava : Y linked

AtiDeergha	Long stature	Acromegaly	FBN1
AtiHrasva	Short stature	Achondroplasia	FGF3
Ati Loma	Hairy	Hereditary Hypertrichosis	MAP2K6
A Loma	Without Hair	Hereditary Hypotrichosis	LIPH, LPAR6, or DSG4 gene.

Matruja bhava : X linked

AtiKrushna	Black	Hereditary Hypermelanosis	TYR
AtiGaura	White	Hereditary Albinism	OCA1 to OCA8
AtiSthula	Obese	Hereditary obesity	MC4R, CYP27A1, TFAP2B, PARK2, IFNGR1, UCP 2 & 3

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AtiKrusha	Lean	Hereditary leanness	ALK, FTO, IRS1 and SPRY2

Matruja factors are nothing but Matruja bhava i .e **X linked Characters**.
Pitruja factors are nothing but Pitruja bhava i.e **Y linked Characters**.

IV. CONCLUSION :

Diagnosing chromosomal disorders can be challenging due to several factors. One major difficulty is the wide range of possible disorders, each with unique genetic variations. Additionally, some disorders may exhibit mild or atypical symptoms, making them harder to identify. Identifying disorder based on Matruja and Pitruja bhava can felicitate diagnosis of genetic disorders. These bhavas mentioned in ayurvedic samhitas provides confined perspective to diagnose this wide range of disorders as discussed above. Earlier diagnosis can help manage the disorders in order to improve patient's quality of life. A multidisciplinary approach involving Ayurgenomics, Dosha -Prakriti relation & Shodhana therapy before conception, Garbhasanskara, are crucial to enhance the accuracy of diagnosis and provide appropriate care.

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